

WHAT IS CLAIMED IS:

1. A vaccine composition for immunizing an animal against infection by *Mycoplasma hyopneumoniae* which comprises

an immunizing amount of *Mycoplasma hyopneumoniae* bacterin;

an adjuvant mixture comprising an acrylic acid polymer and a mixture of a
5 metabolizable oil and a polyoxyethylene-polypropylene block copolymer; and

a pharmaceutically acceptable carrier which vaccine composition after a single administration elicits protective immunity from *Mycoplasma hyopneumoniae*.

2. The vaccine composition of claim 1, wherein the adjuvant mixture consists of an acrylic acid polymer and a mixture of a metabolizable oil that
10 comprises one or more terpene hydrocarbons and a polyoxyethylene-polypropylene block copolymer in a ratio of about 1:25 to 1:50 of acrylic acid polymer to metabolizable oil/ polyoxyethylene-polypropylene block copolymer mixture.

3. The vaccine composition of claim 1 wherein the adjuvant mixture comprises about 1-25% v/v of the vaccine composition.

15 4. The vaccine composition of claim 3 wherein the acrylic acid polymer is present in a final concentration of about 1% v/v and the terpene hydrocarbons/ polyoxyethylene-polypropylene block copolymer mixture is present in a final concentration of about 5% to 10% v/v.

20 5. The vaccine composition of claim 3, wherein the adjuvant mixture comprises about 2% - 15% v/v of the vaccine composition.

6. The vaccine composition of claim 5, wherein the adjuvant mixture comprises about 5% -12% v/v of the vaccine composition.

7. The vaccine composition of claim 1, wherein the metabolizable oil is squalane or squalene.

25 8. The vaccine composition of claim 6 or claim 7, wherein the acrylic acid polymer is Carbopol.

9. The vaccine composition of any of claims 1-8, further comprising at least one bacterin selected from the group consisting of *Haemophilus parasuis*,

Pasteurella multocida, *Streptococcus suis*, *Actinobacillus pleuropneumoniae*,
Bordetella bronchiseptica, *Salmonella choleraesuis* and *leptospira* bacteria.

10. A method for protecting an animal against disease caused by
Mycoplasma hyopneumoniae comprising the step of administering to said animal a
 5 vaccine composition which comprises
 an immunizing amount of a *Mycoplasma hyopneumoniae* bacterin;
 an adjuvant mixture comprising an acrylic acid polymer and a mixture of
 metabolizable oil and a polyoxyethylene-polypropylene block copolymer; and
 a pharmaceutical acceptable carrier which vaccine composition, after a single
 10 administration elicits protective immunity from *Mycoplasma hyopneumoniae*
 infection.

11. The method of claim 10, wherein the immunizing amount of said
 bacteria is about 1×10^8 to 3×10^{11} MHDCE/mL.

12. The method according to claim 11 wherein the immunizing amount of
 15 said bacteria is about 1×10^9 to 3×10^9 MHDCE/mL.

13. The method of claim 10, wherein the mode of administration of said
 administering step is intramuscular, subcutaneous, intraperitoneal, aerosol, oral or
 intranasal.

14. The method of claim 10, wherein the adjuvant mixture consists of an
 20 acrylic acid polymer and a mixture of metabolizable oil that comprises one or more
 terpene hydrocarbons and a polyoxyethylene-polypropylene block copolymer present
 in a final concentration of about 1-25% v/v.

15. The method of claim 14, wherein the acrylic acid polymer of the
 adjuvant mixture is Carbopol.

25 16. The method of claim 14, wherein the metabolizable oil of the adjuvant
 mixture is a terpene hydrocarbon selected from the group of squalene and
 squalane.

17. The method of any claims 10-16, further comprising coadministering
 at least one additional bacterin selected from the group consisting of *Haemonphilus*
 30 *parasuis*; *Pasteurella multocida*; *Streptococcus suis*; *Actinobacillus*
pleuropneumoniae; *Bordetella bronchiseptica*; *Salmonella choleraesuis*; and
leptospira bacteria.

18. A vaccine comprising inactivated *Mycoplasma hyopneumoniae*, a metabolizable oil, a polyoxyethylene-polypropylene block copolymer and an acrylic acid polymer in the form of an oil in water emulsion.

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